respectively, and "Lightning" plates were used. The telescope was guided in R.A. and Dec. so as to allow for the motion of the comet, and the stars are consequently shown as trails representing the comet's motion during the exposure. On each of these photographs there is a bright globular head, several short tails and one long faint tail extending a degree from the comet. On the photograph taken on September 29 as many as seven tails of different lengths, divided by six narrow rifts, can be distinguished. The direction of the long tail on both photographs is in approximately the opposite direction to the projection of the Sun on the plate.

Stereoscopic Pictures of Comet Perrine. By Max Wolf, Ph.D.

The two photographs presented have been made from four plates which I took with my 16-inch double photographic telescope. The two 16-inch lenses are so nearly alike in size and focal length that the idea occurred to me to obtain a stereoscopic effect by exposing plates at slightly different times with the two lenses, so that the movement of the Earth and of the comet should give the necessary shift, and I might hope to obtain the right effect by combining two plates. At first I hoped to be able to use for this purpose two successive plates made with the same telescope; but this gave no satisfactory results: the movement of the comet was too quick.

Indeed the first of the two stereos (566 and 567) gives an almost surprising view in a stereoscope. The comet hangs free in space, very near to the observer, and the trails of the fixed stars lie far behind. Seen with the naked eye the nebulous mass of the comet on the photo is flat and opaque; in the stereoscope it looks like a cloud of dust, condensed towards its centre. The trails of the fixed stars visible through it are seen far behind, giving out their own light through the tail.

The dates of these two pictures are:

No. 566: 1902 Sept. 25, M.T. Königstuhl $7^h\ 45^m{\cdot}5$–$8^h\ 45^m{\cdot}5$
No. 567: „ „ „ „ „ $7^h\ 55^m{\cdot}0$–$8^h\ 55^m{\cdot}0$

and the second stereo:

No. 576: 1902 Oct. 1, M.T. Königstuhl $7^h\ 48^m{\cdot}1$–$8^h\ 48^m{\cdot}1$
No. 577: „ „ „ „ „ $8^h\ 3^m{\cdot}1$–$9^h\ 3^m{\cdot}1$

Here the movement of the comet was still a little too great, so that the stereoscopic effect is not as clearly visible for every observer as on the first pair: it requires to be looked at from a great distance. Still, on this picture the tail of the comet

is more interesting. The scale of the four pictures is exactly the same, and shows the increase of size and of the movement of the comet. Indeed, on a picture of October 8 the tail covers the whole plate and is longer than $3\frac{1}{2}$ degrees.

Now the stereoscope allows us to decide upon an interesting problem which occurred to me in photographing comets.

Examining the star trails on a photograph of a comet I found that every trail of a faint fixed star entering the tail of the comet, instead of becoming fainter by absorption, increases sensibly in brightness. It is a very striking appearance, and I sought for an explanation. I thought that it was produced by the increase of rapidity of the photographic film caused by the faint light of the tail, the so-called "Vorbelichtung." Now the stereo seems to show that this is wrong, and that the phenomenon is an optical effect. Viewing one print in the stereoscope with one eye—closing the other—we see the striking brightening of the star trails in the tail; opening the second eye we see this effect disappear, and the light of the dust of the comet's tail become immediately separated from the light of the fixed star, so that the star trail retains nearly exactly its own brightness while travelling behind the tail of the comet.

In making reproductions of original plates of comets I always found the sky very much brighter on the side of the tail, even many degrees from the comet's nucleus and over a very large area, so that there is no doubt that the cometic matter fills all space around.

Heidelberg, Königstuhl Astrophys. Observatory:
1902 *October* 22.

[The stereoscopic pictures are placed in the Library.]

Note on a Comparison of Groombridge's Catalogue (1810) *with the Greenwich Second Ten-Year Catalogue* (1890), *with reference to the Question of an Apparent Rotation of the Brighter Fixed Stars as a Whole with respect to the Fainter Stars.*

(*Communicated by the Astronomer Royal.*)

In a preliminary note in *Astronomische Nachrichten*, No. 3800, Sir David Gill concludes, as the result of a comparison of Taylor's Madras Catalogue with modern Cape Catalogues, that the brighter stars rotate with respect to the fainter stars as a whole. As in the preparation of the Greenwich Second Ten-Year Catalogue for 1890 Groombridge's Catalogue for 1810 had been brought up to 1890 for comparison, means were to hand to see whether Dr. Gill's conclusions were supported by a comparison of observations made with an interval of eighty years in the part of